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NOTES AND NEWS.

Edited by W. De W. Cairns.

Among recent publications by the University Press of the University of California appears "A complete set of postulates for the logic of classes expressed in terms of the operation 'exception,'" by B. A. Bernstein.

It sometimes happens that a teacher of mathematics desires to examine an article referred to in these columns but does not know where it may be readily obtained. The Monthly desires to be as helpful as possible in such matters; an inquiry directed to the chairman of this department, W. D. Cairns, Oberlin, Ohio, will ordinarily bring the desired information.

Dr. E. S. Allen, who has been an instructor in mathematics in Dartmouth College, has been appointed to an instructorship in Brown University.

Dr. W. F. Shenton has been appointed instructor in mathematics at the Johns Hopkins University.

Dr. K. P. Williams, instructor in mathematics in the University of Indiana, has been advanced to an assistant professorship.

It seems certain that the war in Europe will interfere seriously with the regular receipt in this country of European scientific journals and other publications. Universities and colleges must expect many delays of this sort in the coming months.

For those who have access to the April number of the *Cornhill Magazine* a paper by Professor G. H. Bryan on "Income and Prospects of the Mathematical Specialist" will prove to be very interesting.

The *Mathematical Gazette* for January printed a report entitled "Teaching of calculus in public and secondary schools in the United Kingdom"; this is the report which was presented at Paris in April in response to question A of the International Conference on the Teaching of Mathematics.

The University of Chicago Press has published "Isolation and Measurement of the Electron" by Professor R. A. Millikan of the department of physics of the University of Chicago.

The American Book Company publishes for use this fall a wholly new edition of Raymond's "Plane Surveying for Use in the Class-room and Field." The revised text takes a form more adapted in its size and subject matter to field practice.

Volume 9 of the Supplement of the *Rendiconti del Circolo Matematico di Palermo* contains various addresses given by noted mathematicians during the celebration, held April 14, 1914, of the thirtieth anniversary of the foundation of the "Circolo Matematico di Palermo." This society has 932 members, being the largest advanced mathematical society in the world, and it publishes a journal which Professor Landau, of Göttingen, Germany, called, in his address on the given occasion, the best mathematical journal in the world.

The April, 1914, number of the *Revista de la Sociedad Matemática Española* opens with an article by Professor G. A. Miller, entitled "Groups, nomenclature and notation."

The article by J. Sommers on elementary geometry from the standpoint of modern analysis, which appeared June 8, 1914, in the *Encyklopädie der Mathematischen Wissenschaften,* is divided into two main parts entitled "Geometry in the narrow sense" and "Spherical Trigonometry." The former is subdivided into two main divisions, entitled "Constructions" and "Applications of the theory of groups." The same number of the *Encyklopädie* contains about one hundred pages of an article by M. Zacharias entitled "Elementary geometry and elementary non-euclidean geometry treated synthetically." The earlier article, entitled "On the development of elementary geometry during the nineteenth century," was prepared by M. Simon for this *Encyklopädie,* but it was not accepted. It appeared as a supplement to the *Jahresbericht der Deutschen Mathematiker-Vereinigung,* 1906.

Some of the numbers of the *Revista de la Sociedad Matemática Española* contain definitions of various mathematical terms arranged in alphabetical order. It may be observed that there is no good modern mathematical dictionary in any language. Such a dictionary in the English language is a desideratum, as it would save much time on the part of the student. The great mathematical encyclopedias which are now being published could be utilized in the preparation of such a dictionary.

Professor W. H. Garrett, for several years the head of the department of mathematics at Baker University, has been granted a year's leave of absence and will spend the time at Harvard University.

Dr. M. O. Tripp, head of the department of mathematics at the Muncie, Indiana, Normal School, has been elected professor of mathematics at Olivet College, Michigan.

At the convocation of the University of Chicago on August 29 thirty-four candidates were given the doctorate of philosophy. Of these, four were in the department of mathematics, namely, Meyer G. Gaba, Forbes B. Wiley, W. V. Lovitt, and Harold R. Kingston. There were also two candidates for the master's degree in mathematics.

In answer to Mr. E. B. ESCOTT's request for integral values of a, b and c which will make

$$2(b^2 + c^2 - a^2)(c^2 + a^2 - b^2)(a^2 + b^2 - c^2)$$

a perfect square, E. Fauquembergue suggests (*L'Intermédiaire* for February) placing the last three factors equal to $2\alpha^2$, $2\beta^2$ and $2\gamma^2$ respectively. The solution is thus reduced to that of the system

$$\beta^2 + \gamma^2 = a^2, \qquad \gamma^2 + \alpha^2 = b^2, \qquad \alpha^2 + \beta^2 = c^2,$$

a problem solved by Euler; the simplest solution is

$$117^2 + 240^2 = 267^2, \qquad 240^2 + 44^2 = 244^2, \qquad 44^2 + 117^2 = 125^2.$$

L'Intermédiaire for January indicates in a brief note the manner in which many proofs in the theory of numbers develop by stages. In 1911 Mr. A. Cunningham reported that he had verified the fact that there is no solution in prime numbers of the congruence

$$2^{n-1} - 1 \equiv 0 \pmod{n^2}$$

for $n < 1{,}000$. He just missed finding a solution of the congruence, for in 1913 W. Meissner proved that there is a solution for $n = 1{,}093$, but that there is no other solution less than 2,000. The February number of the same journal gives the proof for $n = 1{,}093$.

A paper by Professor F. CAJORI entitled "A new marking system and means of measuring mathematical abilities," which was read before the mathematics section of the Central Association of Science and Mathematics Teachers at their last meeting, is printed in full in *Science* for June 12. After maintaining that our high school texts do not differ greatly in the amount of material and difficulty of exercises and that as a consequence an experienced teacher can with due care draw up a "standard" test list of questions, Professor Cajori offers a formula for ordering students according to their ability and a method whereby to rearrange these according to an absolute standard. The formula given is

$$\text{Preliminary Mark} = \frac{M_a + rM_b + sO_a + tO_b + uD}{1 + r + s + t + u},$$

where M represents grades based on memory tests (a) in daily work, (b) in examination, O represents original exercises with the same subdivisions, and D diligence shown, while r, s, t, u are the "weights" given to the last four terms in the numerator, relative to the first; the author suggests $s = 1$, $r = t = u = \frac{1}{3}$, The preliminary marks are then rearranged according to Karl Pearson's theory following the Gaussian law.[1] The paper includes an auxiliary table showing "average differential abilities of pupils chosen at random" from classes of various sizes, as well as a bibliography of the principal material in this branch of statistics.

Science reports that Mr. G. N. WATSON, fellow of Trinity College, Cambridge. has been appointed to a position in pure mathematics in University College, London, to fill the vacancy created by the appointment of Dr. A. N. Whitehead to the new professorship of applied mathematics in the Imperial College of Science and Technology, London.

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[1] *Biometrika*, Vol. 1, pp. 390–399.

Relying upon the list as given in *Science* of August 21, we give the doctorates of philosophy conferred by American universities in mathematics and astronomy during the academic year 1913–14:

Johns Hopkins University—JOSIAH WESLEY GAIN, HARRY CLINTON GOSSARD, BESSIE IRVING MILLER, WALTER FRANCIS SHENTON, MABEL MINERVA YOUNG.

The University of Chicago—WILLIAM CHARLES KRATHWOHL, WILSON LEE MISER, FRANK MARION MORRISON, ELTON JAMES MOULTON, LLOYD ARTHUR HEBER WARREN.

Princeton University—RALPH DENNISON BEETLE, HAIG GALAJIKIAN, JOHN MINOR STETSON.

Harvard University—EDWARD SWITZER ALLEN, RAINARD BENTON ROBBINS.

Cornell University—ROBERT WILBUR BURGESS, ANNA HELEN TAPPAN.

University of Illinois—EDWARD AUGUST THEODORE KIRCHER, LOUIS CLARK MATHEWSON.

University of California—BENJAMIN ABRAM BERNSTEIN, DANIEL WALTER MOREHOUSE.

Clark University—JAMES ATKINS BULLARD.

Columbia University—LYMAN MORSE KELLS.

Indiana University—THOMAS EDWARD MASON.

University of Michigan—SUZAN ROSE BENEDICT.

University of Pennsylvania—STANLEY PULLIMAN SHUGERT.

The titles of the dissertations are given in *Science* for the doctorates in mathematics and all the sciences. Chemistry leads with 71, botany follows with 34, mathematics and zoölogy each have 25, physics has 23. The total in all the sciences is 241, in all other departments combined 261.

The combined departments of mathematics and mathematical astronomy at the University of Chicago conduct club meetings for reports on research biweekly during the four quarters of the year. In the summer quarter, meetings are held weekly, the alternate sessions being devoted to the discussion of pedagogical questions. The topics and leaders for the past summer quarter were as follows:

Mr. W. L. HART, "Methods of successive approximation for the solution of equations"; Professor L. E. DICKSON, "The trisection of an angle and other early Greek problems"; Professor D. R. CURTISS, "An example of Gibbs's phenomenon in double Fourier series"; Professors J. W. A. YOUNG and H. E. SLAUGHT, "Books, journals, and associations for teachers of mathematics"; Professor C. N. MOORE, "Some salient features of recent work in the theory of divergent series"; Professor G. A. BLISS, "Mathematical models of the department"; Dr. W. V. LOVITT, "A type of singular points in a transformation of three real variables"; "Open conference on the teaching of mathematics," led by Professor H. E. SLAUGHT, on topics proposed by the students through a question box.